

PATENT ABSTRACTS OF JAPAN

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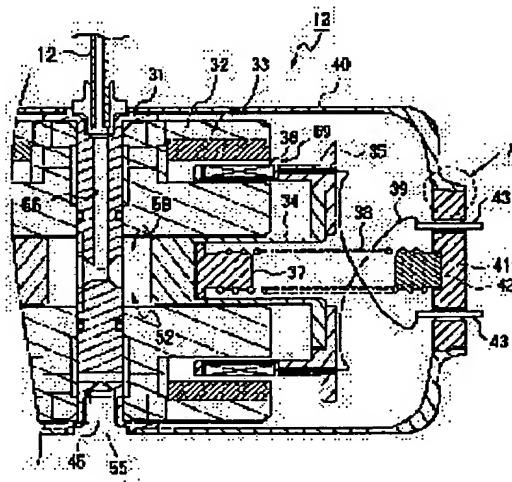
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(54) COMPRESSOR AND REFRIGERATOR

(57)Abstract:

PROBLEM TO BE SOLVED: To prevent a part from being sprung out by the internal pressure of a compressor when a weld part is broken by forming a pillbox structure of the form for fitting one case member to the other case member from a base member side in the connection part of the two case members for forming a case.

SOLUTION: A compressor 1 has a withstand pressure casing 40 for forming a case and a hermetic connector 41. A pillbox structure of the form for fitting the hermetic connector 41 to the withstand casing 40 from the inside is formed in the connection part A between the hermetic connector 41 and the withstand pressure casing 40. The compressor piston 34 side is connected to the hermetic connector 41 through a coil spring 378 and a lead wire 39 and inserted to a cylinder part 31 mounted on a center part 21, the withstand pressure casing 40 is mounted from the outside, and the weld part A is welded to manufacture the compressor 1. Accordingly, even if the weld part A is broken, the hermetic connector 41 can be prevented from being sprung out.



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CLAIMS

[Claim(s)]

[Claim 1] The two 1st coat members and the base member to which said two 1st coat members are fixed, It has the coat container constituted from two 2nd coat members by which welding immobilization is carried out, respectively by said two 1st coat members. The compressor characterized by forming the wax structure where said 2nd coat member of the configuration which goes into said 1st coat member from said base member side is not in the joint of said 1st coat member and said 2nd coat member.

[Claim 2] The compressor according to claim 1 characterized by said 2nd coat member being the hermetic connector which has the current installation terminal connected to the moving coil for driving a compression piston with lead wire.

[Claim 3] The compressor according to claim 2 characterized by fixing said compression piston to said 2nd coat member through a spring.

[Claim 4] The refrigerator equipped with the compressor according to claim 1 to 3.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a small refrigerator like a pulse tube refrigerator or a Sterling refrigerator, and the compressor used since such a refrigerator is constituted.

[0002]

[Description of the Prior Art] As everyone knows, since a pulse tube refrigerator and a Sterling refrigerator are what is used where a high-pressure refrigerant gas is enclosed, the coat container is formed by welding some components. For example, in the compressor which is the component of a refrigerator, as shown in drawing 2, two coat container members 72 are fixed to the member 70 (it consists of one piece or two or more components) which functions as a cylinder of the compression piston 71 connected to an expansion machine (not shown) through a capillary tube 60, and the coat container is further formed by welding the hermetic connector 73 to each coat container member 72.

[0003]

[Problem(s) to be Solved by the Invention] Thus, the conventional compressor is being manufactured by the compressor (coat container member 72) fitting and by welding from the outside in the hermetic connector 73. That is, when the weld zone between the hermetic connector 73 and the coat container member 72 was damaged, the conventional compressor was based on the internal pressure, and the hermetic connector 73 was sticking out of it outside.

[0004] Then, the technical problem of this invention is to offer the compressor of which components do not jump out even if a weld zone is damaged, and a refrigerator.

[0005]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, in this invention, a compressor The two 1st coat members, It has the coat container which consists of two 2nd coat members by which welding immobilization is carried out, respectively in the base member to which the two 1st coat members are fixed, and the two 1st coat members. The wax structure where the 2nd coat member of the configuration which goes into the 1st coat member from a base member side is not in the joint of the 1st coat member and the 2nd coat member shall be formed.

[0006] That is, the compressor of this invention has not the configuration in which the 2nd coat member is welded to the 1st coat member but the configuration to which the 1st coat member is fixed from the outside of the 2nd coat member to a base member (in the condition of having held in the interior), after fixing the 1st coat member to a base member. Therefore, according to this invention, the compressor of which the 2nd coat member does not jump out even if the weld zone between 1st and 2 coat members is damaged will be obtained.

[0007] In addition, in case the compressor of this invention is realized, the 2nd coat member can be used as the hermetic connector which has the current installation terminal connected to the moving coil for driving for example, a compression piston with lead wire. Moreover, in using the 2nd coat member as a hermetic connector, in order to do the activity at the time of manufacture an easy thing, it is desirable to adopt the configuration in which the compression piston is being fixed to the 2nd coat member through the spring.

[0008] And the refrigerator of this invention is constituted using the compressor of the above-mentioned configuration. Therefore, the refrigerator of this invention will function as a refrigerator of which components do not jump out even if a weld zone is damaged.

[0009]

[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is concretely explained with reference to a drawing.

[0010] The configuration of the refrigerator which starts 1 operation gestalt of this invention at drawing 1 is shown. The refrigerator of an operation gestalt is the so-called split mold Sterling refrigerator, and consists of an expansion machine (cold head; not shown), a compressor 13, and a capillary tube 12 that connected them so that clearly from drawing.

[0011] The compressor 13 has symmetrical structure and is equipped with the cylinder part 32 fixed to each side of the center section 31 and the center section 31.

[0012] The center section 31 is the member in which the cavernous section 56 grade connected with the space of the expansion inside of a plane through a capillary tube 12 in the gas induction 55 to which a seal is performed, and the compression space 52 (space demarcated at a cylinder part 32 and the compression piston 34) by the plug 45 for introducing a refrigerant gas (usually helium) in a compressor 13 was prepared. A cylinder part 32 has the cavity 58 of the shape of a cylinder which leads to the cavernous section 56 of the center section 31, and a cavity 58 and the concentric circular slot 59, and the annular magnet 33 is attached in the cylinder part 32 so that the outside wall of a slot 59 may be made.

[0013] Moreover, a compressor 13 is equipped with the member 35 to which the compression piston 34 inserted into the cylindrical cavity 58 of a cylinder part 32, the annular moving coil 36 inserted in the circular sulcus 59, and the compression piston 34 and a coil 36 were fixed. The spring seat 37 of the shape of a cylinder by which the spiral slot was formed in the periphery is attached in the compression piston 34.

[0014] Furthermore, a compressor 13 is equipped with the proof-pressure casing 40 and the hermetic connector 41 for forming the coat container which holds above-mentioned each part. And in the compressor 13, as the hermetic connector 41 and proof-pressure casing 40, as illustrated, that in which the wax structure where the configuration in which the hermetic connector 41 goes into those joints A from the inside (center section 31 side) to the proof-pressure casing 40 was not was formed is used.

[0015] Moreover, the spring seat 42 and two current installation terminals 43 with which the spiral slot was formed in the front face are prepared in the hermetic connector 41. And a coil spring 38 is attached between the spring seat 42 fixed to the hermetic connector 41, and the spring seat 37 fixed to the compression piston 34, between a moving coil 36 and the current installation terminals 43 is connected by lead wire 39, and the compressor 13 is constituted.

[0016] That is, the compressor 13 of an operation gestalt has the configuration manufactured by performing installation and welding of Joint A from an outside in the proof-pressure casing 40, after compression piston 34 grade and the hermetic connector 41 insert what was connected by a coil spring 38 and lead wire 39 in the cylinder part 32 in which it was attached by the center section 31. Therefore, a compressor 13 will function as a compressor of which the hermetic connector 41 does not jump out even if a weld zone A is damaged.

[0017] In addition, although the compressor shown as an operation gestalt was a compressor of the so-called outside spring type, it may apply this technique to the compressor of an inner spring type. However, since it becomes difficult to arrange a hermetic connector in a welding location in this case, as for this technique, applying to the compressor of an outside spring type is desirable. Moreover, although the refrigerator of an operation gestalt was a Sterling refrigerator, it is natural. [of this technique being applied to a pulse tube refrigerator]

[0018]

[Effect of the Invention] According to this invention, even if a weld zone is damaged, components do not jump out, namely, the compressor and refrigerator which can be operated extremely safely can be obtained.

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DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the block diagram of the refrigerator (split mold Sterling refrigerator) concerning 1 operation gestalt of this invention.

[Drawing 2] It is the explanatory view of the configuration of the conventional compressor.

[Description of Notations]

- 12 Capillary Tube
- 13 Compressor
- 31 Center Section
- 32 Cylinder Part
- 34 Compression Piston
- 36 Coil
- 38 Coil Spring
- 39 Lead Wire
- 40 Proof-Pressure Casing
- 41 Hermetic Connector
- 42 Spring Seat
- 43 Current Installation Terminal

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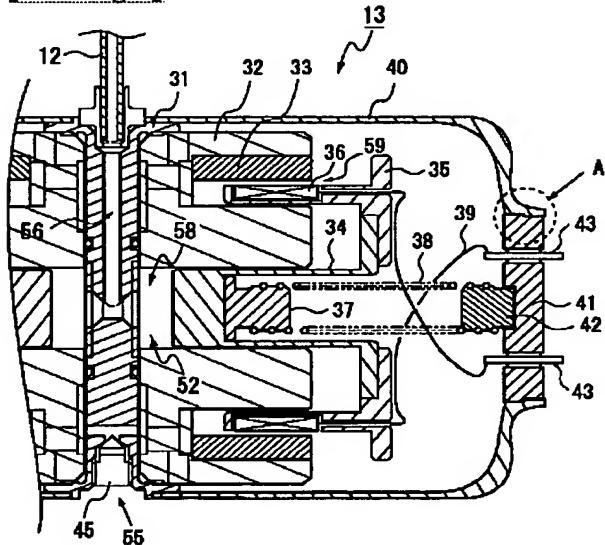
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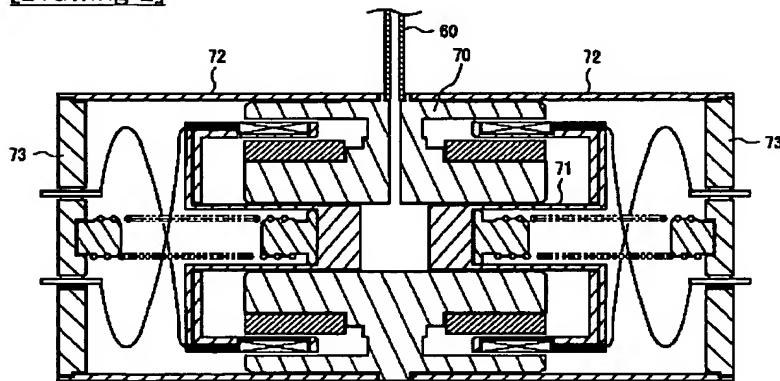
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DRAWINGS

[Drawing 1]



[Drawing 2]



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